**COMP9444 Neural Networks and Deep Learning**

# Quiz 5 (Recurrent Networks)

This is an optional quiz to test your understanding of the material from Week 5.

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1. Explain the format and method by which input was fed to the NetTalk system, and the target output.
2. Explain the role of the *context layer* in an Elman network.
3. Draw a diagram showing the hidden unit activations of a Simple Recurrent Network with two hidden units trained on the $a^n b^n$ task, as it processes $a^8 b^8$.
4. Draw a diagram of an LSTM and write the equations for its operation.
5. Draw a diagram of a Gated Recurrent Unit and write the equitions for its operation.
6. Briefly describe the problem of *long range dependencies*, and discuss how well each of the following architectures is able to deal with long range dependencies:
    a. sliding window approach
    b. Simple Recurrent (Elman) Network
    c. Long Short Term Memory (LSTM)
    d. Gated Recurrent Unit (GRU)

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Make sure you try answering the Questions yourself, before checking the Sample Answers